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Arm morbidity and sick leave among working women shortly after breast cancer surgery

Agneta Wennman-Larsen [a,*], Mariann Olsson [b], Kristina Alexanderson [a], Marie I. Nilsson [a], Lena-Marie Petersson [a]

[a] Division of Insurance Medicine, Department of Clinical Neuroscience, Karolinska Institutet, SE-171 77 Stockholm, Sweden
[b] Division of Social Work, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Stockholm, Sweden

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A B S T R A C T

Background: There is limited knowledge about the impact of arm morbidity on sick leave in the immediate period after breast cancer surgery.
Purpose: To determine if arm morbidity was associated with sick leave shortly after breast cancer surgery and to investigate the association between arm morbidity and sick leave, adjusted for treatment, work characteristics, co-morbidity, time since surgery, and sociodemographic factors.
Sample and methods: Included were 511 women who within 12 weeks had had breast cancer surgery, were aged 20–63 years, had no distant metastasis, pre-surgical chemotherapy, or previous breast cancer, and worked ≥75% before breast cancer diagnosis. Percentages and odds ratios (OR) for being on sick leave were calculated, using multivariable analyses.
Results: Of the women, 10% reported arm morbidity, 43% had had a total axillary clearance, and 60% were on sick leave. In multivariable analysis, those with planned chemotherapy had the highest OR (4.69; 95% CI 2.97–7.41) for being on sick leave. Nevertheless, those reporting arm morbidity had the second highest OR (2.71; 1.23–5.97) which was higher than if having strenuous work postures (2.49; 1.50–4.15) or having had an axillary clearance (1.64; 1.04–2.60).
Conclusion: Arm morbidity is an important factor for whether being on sick leave or not shortly after breast cancer surgery, even more important than type of axillary surgery or work situation. However, planned chemotherapy had the greatest impact for being on sick leave already shortly after breast cancer surgery.

Introduction

Breast cancer (BC) is the most common cancer among women of working ages (Parkin et al., 2005). The fact that most survive the disease has raised an interest in social consequences of BC and its treatments, in terms of sick leave (SL) and return to work (RTW). The primary treatment for BC is surgery, often followed by radio-, chemo-, hormone-, and/or immunotherapy. Many women suffer from long-lasting arm morbidity (AM) after BC surgery, especially after total axillary clearance (Lindqvist et al., 2005; Johnsson et al., 2009; Hayes et al., 2010; Land et al., 2010). Self-reported AM as early as three months after surgery has also been shown to predict AM up to three years later (Albert et al., 2006). In the few studies conducted on this (Satariano and DeLorenze, 1996; Balak et al., 2008; Quinlan et al., 2011), AM has been shown to affect SL and RTW early, that is, two to four months, after surgery (Satariano and DeLorenze, 1996) as well as six months to three years later (Balak et al., 2008; Quinlan et al., 2011). AM may cause difficulties in performing work involving physical strenuous work postures, and this may be one reason to why the odds have been shown to be lower for RTW (Bouknight et al., 2006) and higher for being on SL shortly after BC diagnosis (Satariano and DeLorenze, 1996; Petersson et al., 2011) in occupations involving physical strenuous activities. Chemotherapy is another treatment-related factor that has been shown to negatively influence the duration of BC-related absence from work (Drolet et al., 2005; Lauzier et al., 2008) and RTW (Johnsson et al., 2007, 2009; Balak et al., 2008) in the long-run. This could also be a concern already shortly after surgery, since SL routinely may be prolonged from surgery until treatment starts, despite some waiting time during which the woman may have work capacity.

In 2007, nationwide Diagnosis-Specific Guidelines for Sickness Absence due to BC were introduced in Sweden (Skånér et al., 2011;

* Corresponding author. Tel.: +46 8 524 3677; fax: +46 8 524 832 05.
E-mail address: agneta.wennman-larsen@ki.se (A. Wennman-Larsen).

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National Diagnose-Specific Guidelines for Sickness Absence for Breast Cancer, 2010). The guidelines accounts for type of axillary surgery, strenuous work postures, and chemotherapy and recommend up to three weeks of SL after normal surgery for limited BC, with the following exceptions; a job straining the shoulder joint and removed lymph nodes can justify SL for up to six weeks during rehabilitation. During chemotherapy, SL can be justified during treatment periods, but not between treatments. During radiation, work capacity is often good; but practical problems, e.g. travelling to treatments, might imply need of some SL. Hormonal or immunotherapy does not justify SL. In these guidelines, nothing is stated about the functional status of the arm following surgery or in relation to the work situation. Even though the time specifications in these guidelines are not evidence-based, but based on expert's advice, the guidelines have served as basis for the design and structure of the present study.

The aim of this study was to determine if AM was associated with SL shortly after BC surgery and to investigate the association between AM and SL, in relation to treatment, work characteristics, co-morbidity, time since surgery, and sociodemographic factors.

Sample and methods

Baseline data from an on-going prospective cohort study of women who have had breast cancer surgery was analysed (Petersson et al., 2011). Women were included consecutively after BC surgery, at the consultation for decision on further treatment. They received both oral and written information about the study, explaining voluntariness, confidentiality, and that they could withdraw at any time. The study was approved by the Regional Ethical Review Board in Stockholm, Sweden and informed consent was obtained from all women.

Inclusion criteria were: having had a primary BC surgery at one of three hospitals in the Stockholm area when aged 20–63 years, living in Stockholm County, and literate in Swedish. Exclusion criteria were: known distant metastasis, pre-surgical chemotherapy, and/or a previous BC diagnosis.

Inclusion lasted from July 2007 through November 2009. The number of women included was determined by power calculations based on RTW and SL rates in pilot studies (Johnsson et al., 2009) and on general SL rates in Sweden. To be able to statistically prove ($p = 0.05$) even moderate differences with 80% significance, a sample of 610 patients was needed. However, after corrections based on dropout rates of the first 50% of patients at the 12-month follow up in the prospective cohort study, possible changing SL patterns after the introduction of the diagnosis specific guidelines, and the need for correction for multiple tests, a higher safety level for power was deemed necessary, why 725 patients needed to be included. Of 971 women eligible, 48 (5%) were missed for administrative reasons, leaving 923 women invited to participate. Of these, 198 (21%) declined participation, leaving 725 who responded to the questionnaire. There were no age differences between the women who agreed ($m = 51.3$, sd = 8.1), or refused to participate ($m = 52.4$, sd = 8.1), or who were missed for administrative reasons ($m = 51.9$, sd = 7.5) ($F = 1.343$, df = 2, $p = 0.262$).

To limit the time frame from surgery and to ensure a solid attachment to the labour market, only those women who responded within 12 weeks after surgery and worked ≥75% of full time before the BC diagnosis ($n = 511$, 70%) were included in the study group analysed in this study (Table 1). In the present study there were no differences among those women working ≥75% of full time between the included women that had answered the questionnaire within 12 weeks from surgery and those who responded >12 weeks from surgery regarding; age ($\chi^2 = 0.108$, df = 1, $p = 0.743$), education ($\chi^2 = 0.802$, df = 1, $p = 0.370$), number of comorbidities ($\chi^2 = 0.242$, df = 1, $p = 0.623$) or if having a strenuous work posture ($\chi^2 = 0.342$, df = 1, $p = 0.559$).

Table 1
Working situation at breast cancer diagnosis for all women who answered the questionnaire within 12 weeks from breast cancer surgery and worked ≥75% at diagnosis ($n = 511$) (study group).

	n	(%)
Worked	498	(97.5)
…and on part-time disability pension	4	(0.8)
…and studying	4	(0.8)
…and on part-time sick leave >3 months	2	(0.4)
…and on part-time parental leave	1	(0.2)
…and on part-time old-age pension	1	(0.2)
…and part-time unemployed	1	(0.2)
Total	511	(100)

A comprehensive questionnaire regarding several areas of living with BC was developed and was given to each woman at inclusion together with a prepaid return envelope. For this study, responses to the items about AM, co-morbidity, socio-demographics, occupational situation at diagnosis, and current SL, were analysed. Medical data on tumour stage, date of initial breast surgery, final results of axillary surgery, planned postoperative chemotherapy, and number of re-surgeries was obtained from the Swedish National Quality Register for BC.[1]

Measures

Current SL was measured in terms of duration and grade (full or partial) when completing the questionnaire. The response options were "no", "yes, for the past week", "yes, for the past month", "yes, for the past three months", "yes, for more than three months". For some analyses, this variable was dichotomized into "on sick leave" and "not on sick leave". In Sweden, all with income from work are covered by sickness insurance, covering 80% of lost income up to a certain level when disease or injury has caused work incapacity. SL can be for full or part-time: 25%, 50%, or 75% of ordinary working hours – here dichotomised into "on full" and "on partial" SL.

Age: dichotomized by the median into <51 and ≥51 years. *Education*: "elementary school or equivalent (≤9 years)", "grammar/secondary school (10–12 years)", and "college/university". For the logistic regressions, dichotomized into "low" (elementary or grammar/junior secondary school) and "high" (college/university).

Work situation at breast cancer diagnosis was measured by one question with eight response options (more than one option could be chosen): gainful employment, on parental leave, on sick leave for more than three months, unemployed, student, homemaker, on disability pension, on old age pension. After the response option percentage of full time could be entered.

Arm morbidity (AM): three items, two from the EORTC BR23 arm-problems scale (Sprangers et al., 1996): during the past week "did you have pain in your arm or shoulder" and "was it difficult to raise your arm or move it sideways", and one we developed "did you have reduced strength in arm or shoulder", with four response alternatives: 1 "not at all", 2 "little", 3 "quite a bit", and 4 "much". The items constitute an average summated scale "arm morbidity" (Chronbach's $\alpha = 0.84$; inter-item correlation 0.60–0.66), which was dichotomized by the response alternatives, with <3 representing "no/little AM" and ≥3 representing "quite a bit/much" AM.

Time from surgery: measured as the difference in weeks between date of first surgery and date when responding to the

[1] These data were used with the permission of the Steering Board of the Swedish National Quality Register for Breast Cancer.